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Plates may only allow for growth of select organisms. Additional testing may be required to identify various colony types grown.

Handling and Storage Instructions:

MCA Agar plates will arrive at room temperature. The following storage options are listed below:

1. Short / Long Term Storage: Store the product at 2°C to 8°C. The expiration date of plates stored at this temperature is 4 months from the date of manufacture.

Modified Columbia Agar (MCA) Plate

Product Insert

Modified Columbia Agar plates are used for the isolation and cultivation of anaerobic bacteria within the *Bifidobacteria sp.* from a variety of clinical and non-clinical materials.

Precautions:

MCA plates are for In-Vitro Use only. MCA plates are made aseptically, but non-sterile. The plates are packaged aseptically and should be handled aseptically to prevent contamination during use. This medium is very selective for *Bifidobacteria*. A **Safety Data Sheet** is available on our website.

Product Characteristics:

Columbia Broth is a medium for isolating and cultivating fastidious microorganisms (9); however, this MCA medium has been modified by the addition of propionic acid and pH adjustment to selectively isolate and grow *Bifidobacteria sp.* (8). This medium can be used for quantifying *Bifidobacteria* from human feces (5), as an indicator of fecal contamination of meat (6), milk and cheese (3), and beef and pork (2) products. *Bifidobacteria* are more specific and sensitive indicators of fecal contamination because they are found in higher numbers than *Escherichia coli* in the gut and they do not grow readily outside the gut environment without anaerobic conditions, as do *E. coli* (2).

Infections caused by *Bifidobacteria* are extremely rare in humans (4). *Bifidobacteria* are reported to be beneficial to human health with their absence in the large intestine being used as an indicator of an unhealthy state (7). These findings have resulted in *Bifidobacteria* being used as a probiotic (1).

Growth of *Bifidobacteria* on MCA plates require anaerobic incubation in jars, bags, or chambers.

<u>Media Formulation</u> (per liter)	<u>Initial pH: 5.0 to 5.3</u>
Columbia Broth	35.0 g
Glucose	14.0 g
Powered agar	15.0 g
DL Lactic Acid	9.4 g
Propionic Acid	5.0 mL
Deionized water	(made up to final volume)

This formula is typical. Production lots may be adjusted, to offset variances in raw materials in order to meet performance criteria.

Refer to plate / label for actual expiration date.

Instructions for Use:

Before use, allow MCA plates to warm to room temperature. Remove the plate from the protective pouch. Examine plates for contamination and the expiration date.

After inoculation is complete, invert plates and incubate in an anaerobic bag, jar, or chamber to maintain an anaerobic environment. Use an appropriate indicator (such as OxyBlue™) inside the plate, bag, jar, or chamber to test / confirm anaerobiosis.

Quality Control:

Oxyrase, Inc. certifies that samples of each lot were quality control tested and performed acceptably according to Oxyrase, Inc.'s specifications, which include Clinical and Laboratory Standards Institute (M22-A3: Quality Assurance for Commercially Prepared Microbiological Culture Media). The following tests were confirmed:

<u>Organism</u>	<u>ATCC #</u>	<u>Results</u>
<i>B. fragilis</i>	25285	No growth in 2-3 days
<i>B. adolescentis</i>	15703	Growth in 2-3 days
<i>E. coli</i>	25922	No growth in 2-3 days

Guarantee:

We guarantee 90 days of shelf-life at 2°C to 8°C from shipment date. If a longer shelf-life is needed, this should be arranged at the time your order is placed.

If MCA plates fail to arrive with at least a 4 week shelf life, are contaminated and or oxidized, or fail when used as specified under recommended storage and use conditions, Oxyrase, Inc. will refund your purchase price. To receive a product refund, write or call Oxyrase Inc. with the product lot number printed directly on the plate in question (a return of defective product may be required for further investigation and evaluation). Oxyrase, Inc. is available to answer any questions about this product and its applications.

ATCC is a trademark of the American Type Culture Collection

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Limitations:

1. Liang, M.T. 2008. Safety of Probiotics: Translocation and Infection. *Nutr Rev.* 66(4): 192-202.
2. Gavini, F., Delcenserie, V., Kopeinig, K., Pollinger, S., Beerens, H., Bonaparte, C., and Upmann, M. 2006. Bifidobacterium species Isolated from Animal Feces and from Beef and Pork Meat. *J Food Prot.* 69(4): 871-877.
3. Beernes, H., and Neut, C. 2005. Usefulness of Bifidobacteria for the Detection of Faecal Contamination in Milk and Cheese. *Lait.* 85: 33-38.
4. Borriello, S.P., Hammes, W.P., Holzapfel, W., Marteau, P., Schrezenmeir, J., Vaara, M., and Valtonen, V. 2003. Safety of Probiotics that Contain Lactobacilli or Bifidobacteria. *Clin Infect Dis.* 36(6): 775-780.
5. Hartemink, R., and Rombouts, F.M. 1999. Comparison of Media for the Detection of Bifidobacteria, Lactobacilli and Total Anaerobes from Faecal Samples. *J Microbiol Methods.* 36(3) 181-192.
6. Beerens, H. 1998. Bifidobacteria as Indicators of Faecal Contamination in Meat and Meat Products: Detection, Determination of Origin and Comparison with *Escherichia coli*. *Int J Food Microbiol.* 40(3): 203-207.
7. Gibson, G.R., and Wang, X.J. 1994. Regulatory Effects of Bifidobacteria on the Growth of Other Colonic Bacteria. *Appl Bacteriol.* 77(4): 412-420.
8. Beerens, H. 1990. An Elective and Selective Isolation Medium for Bifidobacterium ssp. *Letters in Applied Microbiology.* 11: 155-157.
9. Morello, J.A., and Ellner, P.D. 1969. New Medium for Blood Cultures. *Appl Microbiol.* 17: 68-70.